

REMARKS/ARGUMENTS

The Office Action mailed June 18, 2004, has been received and reviewed. Claims 1 through 67 are currently pending in the application. Claims 12 through 63 have been withdrawn from consideration as being drawn to non-elected invention(s). Claims 1 through 11 and 64 through 67 stand rejected. Applicants have amended claim 1 and respectfully request reconsideration of the application in view of the arguments set forth hereinbelow.

Information Disclosure Statement(s)

Applicants note the filing of an Information Disclosure Statement herein on October 20, 2003 and note that no copy of the PTO-1449 was returned with the outstanding or previous Office Actions. Applicants respectfully request that the information cited on the PTO-1449 be made of record herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 4,030,622 to Brooks et al. in View of U.S. Patent No. 5,911,461 to Sauter et al. and U.S. Patent No. 4,415,794 to Delfino et al.

Claims 1 through 11 and 64 through 67 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brooks et al. (U.S. Patent No. 4,030,622) in view of Sauter et al. (U.S. Patent No. 5,911,461) and Delfino et al. (U.S. Patent No. 4,415,794). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejections of the claims are improper because the references relied upon by the Examiner fail to teach or suggest all the limitations of the presently claimed invention, because there is a lack of motivation to combine the references in the manner proposed by the Examiner and because there is not a reasonable likelihood of success in the proposed combination of references.

Independent claim 1 is directed to a system for marking integrated (IC) packages. The system comprises: *a plurality of trays, each tray being sized and configured to carry a plurality of discrete integrated circuit (IC) packages*; a transport actuator; *a tray carrier carried by, and unsecured to, the transport actuator for receiving at least one tray of IC packages of the plurality of trays*; an input shuttle assembly for providing the at least one tray of IC packages to the tray carrier; an output shuttle assembly for receiving the at least one tray of IC packages from the tray carrier; and a laser marking station disposed adjacent a portion of the transport actuator between the input shuttle assembly and the output shuttle assembly. Applicants submit that the combination of Brooks, Sauter and Delfino fails to teach or suggest all of the limitations of claim 1.

The Examiner cites Brooks as teaching a transport actuator for receiving trays of an IC package, an input and output shuttle assembly for providing the trays of IC packages to and from the tray carrier and a laser marking station disposed adjacent a portion of the transport actuator between the input and output shuttle assemblies. The Examiner cites Sauter as teaching a tray carrier unsecured to the transporter wherein an upper surface of the tray transport and a lower surface of the tray carrier include mutually cooperative physical structures. The Examiner then cites Delfino as disclosing the use of a laser for scanning a wafer.

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Brooks to utilize a tray for the wafer in order to reduce the danger of damage thereto by reducing the surface area of the wafer contacting the carrier and, further, to modify the combined invention of Brooks and Sauter to utilize a laser in order to remove ion implantation damage. Applicants respectfully disagree.

In rejecting the claims, the Examiner asserts that Applicants may not rely on the recitation of an intended use to define over the cited references. However, Applicants note that all of the arguments set forth herein are directed to the fact that the cited references and proposed

combination thereof fail to render obvious the recited *structural configuration* of the presently claimed invention.

Considering the references relied upon by the Examiner, Brooks teaches a system of transporting and handling silicon wafers. (Col. 1, lines 6 - 7). While the Examiner has characterized Brooks as teaching a transport actuator for receiving trays of IC packages, Applicants submit that Brooks fails to teach or suggest a plurality of *trays*, each tray being sized and configured to carry a plurality of discrete integrated circuit (IC) packages. Nor does Brooks teach a *tray carrier* which is carried by, and unsecured to, the transport actuator for receiving *trays of IC packages*.

Rather, Brooks teaches the loading of individual *wafers* (190) *directly onto a tongue* (210) in preparation for transporting the wafers along a vibratory track (30). A second tongue (210') assists in removal on the wafer from the track and into another cassette (214). (Col. 7, lines 5 - 39). Quite simply, *no tray or tray carrier is taught or suggested by Brooks*.

Applicants further submit that Sauter fails to teach a plurality of trays, each tray being sized and configured to carry a plurality of discrete integrated circuit (IC) packages. Also, contrary to the Examiner's assertion, Sauter fails to teach or suggest a *tray carrier* which is carried by, and unsecured to, a transport actuator for receiving at least one tray of IC packages of the plurality of trays.

Rather, Sauter teaches a *wafer carrier* configured to carry a *single* wafer, not a *tray* that, in turn, is configured to carry a plurality of *discrete* IC packages. Applicants note that the term "discrete," as set forth in the Merriam-Webster Online Dictionary, is commonly viewed to mean:

1 : constituting a *separate entity* : *individually distinct* [and]

2 a : consisting of distinct or *unconnected elements*

(<http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=discrete&x=11&y=12>, as visited September 17, 2004; emphasis added).

Clearly, Sauter does not teach or suggest a tray that is sized and configured to carry a plurality of discrete integrated circuit packages. Again, Sauter simply teaches a *wafer carrier* sized and configured to carry a *single* wafer.

Additionally, Sauter fails to teach or suggest a *tray carrier* in any form. While the Examiner asserts that Sauter teaches a *tray carrier*, no specific teaching is cited or relied upon by the Examiner. Clearly Sauter's wafer carrier may not be viewed as a tray carrier as recited in claim 1 of the presently claimed invention. Moreover, the only other component disclosed by Sauter (besides the *wafer* carrier) is a "guard ring 9" which inhibits the flow of deposition gas to the contact locations between the wafer and the wafer carrier. (See, e.g., col. 3, lines 14-39). Sauter does not teach or suggest in any way that the guard ring is useful as a *tray carrier*.

Delfino discloses a method of scanning the surface of a semiconductor wafer in a manner such that the laser beam never crosses the edge of the wafer. In short, Delfino fails to teach or suggest any sort of tray or tray carrier.

Applicants submit that, not only do Brooks, Sauter and Delfino fail to teach or suggest all of the limitations of claim 1 of the presently claimed invention, but there is also a lack of motivation to combine the references in the manner proposed by the Examiner. Furthermore, there is no reasonable expectation of success in combining the references as proposed by the Examiner.

The Examiner has indicated that, in past arguments, Applicants have simply attacked the references cited by the Examiner individually rather than discussing the combination thereof. Applicants respectfully disagree with this assertion. While Applicants have cited specific passages and teachings from each of the references, such citations have been made in order to show that the explicit teachings of the references themselves argue against the Examiner's proposed combination. In other words, the references teach away from one another and, therefore, reliance on specific teachings of each reference, *in view of the proposed combination by the Examiner*, is required in order to show the impropriety of the Examiner's proposed combination.

As such, Applicants note that Brooks teaches away from using either a *tray* or a *tray carrier* (both of which are recited by claim 1 of the presently claimed invention) in its transport system. In discussing the existing state of the art, Brooks states that various techniques have previously been utilized to transport wafers into and out of sealed vacuum chambers including "rotary carousels, endless conveyor belts, *movable carriages*, etc." (Col. 1, lines 41 - 43, emphasis added). Brooks states that such techniques are inadequate because "the *carriage*

element" (i.e., the carrier), "must at some point penetrate the housing of the chamber, and the penetration points must therefore be sealed so as to isolate the chamber from its ambient environment." (Col. 1, lines 44 - 47). In addressing this issue, Brooks teaches the sequential transport of wafers, without any extraneous carrier mechanism, along a defined path into the sealed chamber.

By transporting a single wafer at a time without *either a tray or a tray carrier*, Brooks teaches that it is easier to seal the air-tight chamber. In other words, use of a tray to carry the wafer would make it more difficult to seal the air-tight chamber. Logically, using both a *tray and a tray carrier* would make it even more difficult to seal the air-tight chamber. In sum, placing the wafer in any type of tray (e.g., the wafer carrier of Sauter), tray carrier, or both, for transport in the system disclosed by Brooks would render the system inadequate for its intended purpose and defeat the design of the Brooks system. As such, one of ordinary skill in the art would clearly avoid using any kind of tray or tray carrier (including the wafer carrier of Sauter) with the system of Brooks.

Considering the explicit teachings of Sauter, the carrier is explicitly described to support the *wafer* from therebeneath so as to avoid contact with the outer periphery or upper surface of the wafer. Sauter describes the wafer carrier as contacting the wafer "below an imaginary center plane 7 which is situated in the center of the wafer between the flat front side 5 and the flat rear side 6 of the semiconductor wafer." (Col. 2, lines 56 - 59). Sauter teaches that this arrangement allows the wafer to be "coated in a reactor without the disadvantage that the coating is impaired at the rim of the front side by the presence of the carrier." (Col. 2, lines 60 - 62).

Referring back to Brooks, Brooks teaches that the transport of wafers involves placing the wafers on a track which is "forced to undergo small amplitude vibrations" and that such vibrations have "a first displacement component perpendicular to the track which *repetitively lifts wafers momentarily out of contact with the track*, and a second displacement component directed long the track which advances the wafers along the track by a minute amount each time they are lifted off the track." (Brooks, col. 3, 27-35, emphasis added). Aside from the fact that Brooks expressly teaches away from using a tray or tray carrier, it would be senseless to use the wafer carrier of Sauter with the system of Brooks since Brooks' vibratory track would cause shaking and displacement of the wafer relative to Sauter's carrier during transport. One of ordinary skill

in the art would recognize that such a combination would result in the wafer becoming unseated from Sauter's wafer carrier if both the wafer carrier and its associated wafer were both to be placed on Brooks' vibratory track. This alone would prevent one of ordinary skill in the art from combining the teachings of Brooks with Sauter.

Additionally, the system of Brooks includes a platen (120) which is rotated to place a wafer in a vertical position for processing purposes. (Col. 6, lines 34 - 38). The wafer carrier of Sauter is simply not constructed to retain a wafer in any position except the horizontal arrangement disclosed thereby. Use of Sauter's wafer carrier in a position that is rotated substantially 90° from that disclosed by Sauter would clearly result in the wafer sliding off of the carrier resulting in damage to the wafer (and probably to Brooks' system). Thus, there is clearly no motivation to combine the wafer carrier of Sauter with the system of Brooks. Nor is there a reasonable expectation of success in combining the references as proposed by the Examiner.

It is noted that the Examiner's stated motivation for combining Brooks and Sauter is to "reduce the danger of damage" to the wafer by reducing the surface area contacting the wafer. (See, Office Action, page 3). However, this stated motivation is negated by the fact that the vibratory track of Brooks' system would cause a wafer to be uncontrollably bounced around and jostled relative to the Sauter's wafer carrier, likely resulting in considerable damage to the wafer.

Further, it is noted that the "danger of damage" referred to by Sauter includes "the danger that [a] growing layer [of a material] coating will produce a firm joint between the semiconductor wafers and the supporting surface on which the semiconductors are resting." (Sauter, col. 1, lines 34-37). Since the system of Brooks is not associated with a coating process such as is disclosed by Sauter, there is clearly no danger that the type of damage that is to be prevented by Sauter's carrier will ever occur while using Brooks' system.

It is clear that the Examiner's proposed combination of references would not result in an operable system without substantial modification to either the system of Brooks or the carrier of Sauter – such modifications being contrary to the explicit teachings of the references.

Thus, Applicants submit that Brooks, Sauter and Delfino fail to teach and suggest all of the limitations of claim 1 of the presently claimed invention, that there is a lack of motivation to combine the references, and that there is no reasonable expectation of success in combining Brooks and Sauter as proposed by the Examiner.

As such, Applicants submit that claim 1 is clearly allowable over the combination of Brooks, Sauter and Delfino. Applicants further submit that claims 2 through 11 and 64 through 67 are allowable as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 2, Applicants submit that Brooks, Sauter and Delfino fail to teach or suggest a *tray transport* having the *tray carrier* disposed thereon without securement thereto. In other words, claim 2 requires a tray received by a tray carrier which is disposed on the tray transport as part of the transport actuator.

With respect to claims 3-11, Applicants submit that Brooks, Sauter and Delfino fail to teach or suggest that the upper surface of a *tray transport* and a lower surface of a *tray carrier* have mutually cooperative physical features. While the Examiner appears to cite Sauter as disclosing such subject matter, Applicants submit that Sauter only discloses a *wafer carrier* having an edge which contacts a beveled edge of the *wafer* at a conformal angle which teaching fails to teach or suggest the subject matter set forth in claim 3 of the presently claimed invention. Nor can the ring guard (9) of Sauter (the only other component disclosed by Sauter) be viewed to teach or suggest the recited limitations.

With respect to claims 4-11, Applicants submit that the references relied upon by the Examiner fail to teach or suggest that the mutually cooperative physical structures are adapted to align the *tray carrier* on the *tray transport* when the tray carrier is disposed thereon.

With respect to claims 5 through 11, Applicants submit that the references relied upon by the Examiner fail to teach or suggest that portions of the mutually cooperative physical structures provide a fulcrum for *tilting* of the *tray carrier* with respect to the *tray transport*. While the Examiner generally cites Sauter as teaching such subject matter, Applicants fail to find any specific teaching. Furthermore, Applicants submit that if the wafer carrier of Sauter was tilted relative to any transport on which it may be disposed (although Sauter provides no teaching or suggestion of such) the wafer held thereby would likely slip off the carrier due to its configuration as discussed above. As such, Applicants submit that Sauter teaches away from the presently claimed invention.

With respect to claims 6 and 7, Applicants submit that the references relied upon by the Examiner fail to teach or suggest that the *tray transport* is rectangular, but for a corner severed

therefrom adjacent the fulcrum. While the Examiner points to FIG. 4 of Sauter, Applicants fail to find such subject matter disclosed thereby.

With respect to claim 7, Applicants submit that the references relied upon by the Examiner fail to teach or suggest a lifting device extendable to contact the *tray carrier* at a location remote of the fulcrum.

With respect to claims 8 through 11, Applicants submit that the references relied upon by the Examiner fail to teach or suggest that the *tray transport* is of lesser longitudinal extent than the *tray carrier*.

With respect to claim 9, Applicants again submit that the references relied upon by the Examiner fail to teach or suggest that the *tray transport* is rectangular, but for a corner severed therefrom adjacent the fulcrum.

With respect to claims 10 and 11, Applicants again submit that the references relied upon by the Examiner fail to teach or suggest a lifting device extendable to contact the *tray carrier* at a location remote of the fulcrum.

With respect to claim 11, Applicants submit that the references relied upon by the Examiner fail to teach or suggest a lifting device which is extendable from a location below the *tray carrier* and adjacent a longitudinal end of the *tray transport*.

With respect to claims 64 through 67, Applicants submit that the references relied upon by the Examiner fail to teach or suggest a *tray carrier* which is substantially rectangular and includes a substantially planar upper surface having upwardly extending stops at each corner thereof. While the Examiner points to FIG. 4 of Sauter, Applicants fail to find such subject matter disclosed thereby.

With respect to claims 65 through 67, Applicants submit that the references relied upon by the Examiner fail to teach or suggest a *tray carrier* which includes a portion of reduced width defined by mutually longitudinally coextensive elongated notches in parallel sides thereof. While the Examiner points to FIG. 4 of Sauter, Applicants fail to find such subject matter disclosed thereby.

With respect to claims 66 and 67, Applicants submit that the references relied upon by the Examiner fail to teach or suggest a *tray carrier* which includes a plurality of downwardly facing notches in the two parallel sides thereof. While the Examiner points to FIG. 4 of Sauter,

Applicants fail to find such subject matter disclosed thereby.

With respect to claim 67, Applicants submit that the references relied upon by the Examiner fail to teach or suggest that the plurality of downwardly facing notches in the *tray carrier* comprises two notches on each of the two parallel sides of the tray carrier. While the Examiner points to FIG. 4 of Sauter, Applicants fail to find such subject matter disclosed thereby.

Applicants, therefore, respectfully request reconsideration and allowance of claims 1 through 11 and 64 through 67.

ENTRY OF AMENDMENTS

The amendments to claim 1 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Applicants further note that the amendments to claim 1 correct textual errors and do not surrender or alter the scope of claim 1.

CONCLUSION

Claims 1 through 11 and 64 through 67 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Bradley B. Jensen", followed by a long horizontal line.

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